

WHAT IS CLAIMED IS:

Sub 1  
1. An apparatus for assembling components of a data storage device comprising:

a frame;  
support means coupled to the frame for removably supporting a component storage member removably supporting a plurality container of components for assembly;  
assembly means, coupled the frame and operable between supported component storage member and an unassembled data storage device, for sequentially unloading individual components from component storage member and assembling the unloaded components into the data storage device; and  
positioning means for sequentially aligning components for assembly by the assembly means.

2. The apparatus of claim 1 wherein the component storage member supports a plurality of stacks of components at spaced locations arranged about a center point and comprises:

a rotatable base having a rotation axis and adapted to support the component storage member so that the center point of the component storage member is coaxial with the rotation axis of the base; and  
means for incrementally rotating the base to sequentially positioning each stack of components for assembly.

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3. The apparatus of claim 2 farther comprising a vacuum source, operably coupled to the rotatable base, for supplying a vacuum to removably secure a component storage member to the rotatable base.

4. The apparatus of claim 2 further comprising means for incrementally aligning individual components from a stack of components relative to the assembly means.

5. The apparatus of claim 2 wherein individual components in a component stack are supported in an elongated container and the component storage member includes means for removably securing a plurality of containers at spaced locations about the center point of the component storage member aligned with the rotation axis.

6. The apparatus of claim 1 wherein the apparatus includes a plurality of support means coupled to the frame for supporting multiple component storage members and including means for operating the assembly means between multiple component storage members the means operating the assembly means to unload a component storage member and detecting when the component storage member is empty and shifting the assembly means to an alternate component storage member for operation.

7. The apparatus of claim 1 wherein the component storage member is adapted to house discs for assembly in a spindle motor of a data storage device.

8. The apparatus of claim 7 wherein the component storage member includes means for removably coupling a

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plurality of disc containers storing a plurality of stacked discs to the component storage member at concentric spaced locations.

9. The apparatus of claim 8 wherein the disc containers include covers and the apparatus includes means for removing disc container covers prior to assembling discs housed in the disc container.

10. The apparatus of claim 1 wherein the component storage member is adapted to house spacers for assembly in a spindle motor of a data storage device.

11. The apparatus of claim 1 wherein the apparatus is adapted to assembly components of a disc stack supported by a spindle motor and further comprising:

a plurality of support members coupled to the frame, one of the support members adapted to removably support a component storage member for discs and another of the support members being adapted to support a component storage member for spacers;

a plurality of assembly members, one of the assembly members being coupled to the component storage member supporting discs for assembling discs and another of the assembly members being coupled to the component storage member supporting spacers for assembling spacers; and  
means for coordinating operation of the plurality of assembly members to alternately assembly discs and spacers.

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13. The apparatus of claim 12 wherein the disc containers houses a plurality of coaxially aligned discs aligned along a disc stack axis and further comprises means for incrementally moving the support base for sequentially positioning the disc container to unload individual discs in a disc stack.

14. The apparatus of claim 11 wherein the component storage member for spacers includes a base including a plurality of spacer posts arranged about a center point and sized to support a plurality of stacked spacers and each support members includes a support base rotationally coupled to the frame for supporting the base of the spacer component storage member for rotation about the center point and including means for rotating the component storage member for aligning sequential posts for assembly.

15           The apparatus of claim 14 further comprising  
elevator means operably coupled to the component storage  
member for spacers for moving spacers toward an extended  
end of posts for assembly.

16. A disc carousel adapted to support discs for assembly, the carousel including  
a frame; and  
a plurality of spaced cooperating first and second latch members supported relative to the frame, the first and second spaced latch members being spaced to couple to ends of a disc container housing a plurality of coaxially aligned discs for removably securing a plurality of disc containers.

17. A method for assembling a spindle motor of a data storage device comprising steps of:

- (a) providing a spacer storage member supporting a plurality of spacers for assembly and a disc storage member supporting a plurality of discs for assembly;
- (b) coupling a filled spacer storage member and disc storage member to an automated spindle motor assembly apparatus;
- (c) alternately assembling a disc unloaded from the disc storage member and a spacer unloaded from the spacer storage member in a disc drive;
- (d) removing an empty spacer storage member; and
- (e) removing an empty disc storage member.

18. The method of claim 17 wherein the providing step comprises providing the spacer storage member with a plurality of posts for storing a plurality of stacks of spacers and further comprising steps of:

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- (f) providing a sensor which senses an empty stack of spacers; and
- (g) adjusting the position of the storage member to assembly spacers from a next post.

19. The method of claim 17 wherein the providing step comprises providing the disc support member to be adapted to support a plurality of disc containers having covers closing an inner cavity housing discs and further comprising steps of:

- (f) providing an apparatus for mechanically removing a cover of a disc container;
- (g) positioning the container relative to the apparatus for removing the cover; and
- (h) operating the apparatus for removing the cover to remove the cover from the disc container.

20. The method of claim 17 comprising steps of:

- (f) providing an unloader including a spring biased unload member operable between a first position for unloading individual discs from a stack of discs and a second position, the unloader including a sensor;
- (g) moving the unload member to the first position;
- (h) operating sensor to detect a disc and incrementally indexing the disc storage member until a disc is detected; and
- (i) operating the unload member to the second position for assembly.

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